INTRODUCTION

The second annual report of the Western Regional Panel on Aquatic Nuisance Species, covering the period of July, l997 through Sept, l998 is submitted to the Aquatic Nuisance Species Task Force pursuant to Section 1203(a)(6) of the National Invasive Species Act of l996.

BACKGROUND ON NONINDIGENOUS AQUATIC NUISANCE SPECIES IN THE WESTERN REGION

Increasing numbers of Aquatic Nuisance Species(ANS) including aquatic animals and plants are invading coastal and inland waters of Western North America. Nonindigenous aquatic species are introduced and spread by activities such as boating, aquaculture industry, maritime commerce, fish stocking, and the horticulture industry. These unwanted introductions are adversely impacting western water resources and aquatic ecosystems significantly more each year. The west has limited fresh water resources on which to meet demands for municipal, industrial, recreational and agricultural uses and for the protection and restoration of aquatic ecosystems. Estuarine and marine ecosystems provide important environmental areas for many western species. Aquatic nuisance exotics reduce the quality and quantity of water available for many of these ecosystems and disrupt the food chain for other species.

The introduction of nuisance species has economic consequences. This section provides selected examples of adverse economic impacts. Water delivered by the Bureau of Reclamation in the west is used by farmers to provide the annual food requirements of 38 million people. These deliveries can be adversely affected by aquatic nuisance species such as; hydrilla, Eurasian milfoil, Zebra mussels, and Asiatic clams. The economic cost of these aquatic nuisance species to Federal, State and local governments in maintaining delivery systems can be in the tens of millions in addition to the environmental cost. Cost are similar in the coastal marine/estuary ecosystems. The annual harvest of invertebrate species for food in Puget Sound exceeds $20 million annually. This fishery is vulnerable to exotic green crab predation.

The greatest threat to western coastal water resources is the introduction and spreading of invading species with ballast water. The greatest threat to inland western waters is the possible introduction of zebra mussels and nuisance aquatic vegetation by recreational boaters and the aquaculture industry.

WESTERN REGIONAL PANEL ON AQUATIC NUISANCE SPECIES - HISTORY, MEMBERSHIP AND PROCEDURES

Section 1203 of the National Invasive Species Act calls for the formation of a Western Regional Panel on Aquatic Nuisance Species. At its November l996 meeting, The Aquatic Nuisance Species(ANS) Task Force(National Aquatic Nuisance Species Task Force List, Appendix A) requested that the Western Zebra Mussel Task Force work with the San Francisco Estuary Project(SFEP), Prince Williams Sound Regional Citizens Advisory Council (PWSRCAC) and Washington and British Columbia Exotic Species Work Group(WBCESWG) to develop a proposed membership list, including marine and freshwater interests, for the Western Regional Panel. Representatives from the WZMTF, SFEP, PWSRCAC, and WBCESWG formed the WRP work group and began developing a proposed membership for the WRP.

The WRP Work Group presented its WRP proposal at the April l4th, l997 meeting of the ANS Task Force Meeting in Silver Spring, Maryland. Letters of invitations to participate on the Panel were sent to the Governors of the l9 western States, Premiers of the 4 western provinces, and Tribal Governments and selected federal agencies, research institutions, private industry and conservation organizations.

The first forum and organizational meeting of the WRP was held in Portland, Oregon on July 8 and 9th, l997 at Portland State University. Subsequent meeting have been held in Sacramento, CA in March, l998, Denver, CO, Sept. l998 and Austin, TX, October, 1999.

There are 47 WRP members representing state, federal, tribal, academic, industry, conservation organizations, and freshwater and marine interests (Appendix B, Membership List). The geographic range of the WRP reaches east to Kansas, west to the California and Hawaiian islands, north to Alaska and south to Texas.

The WRP focuses on prevention and control of aquatic nuisance exotics. Because aquatic exotics do not respect boundaries, the inclusion of freshwater and marine representatives on the WRP will help ensure that issues such as introduction and control of nuisance aquatic organisms are dealt with in a comprehensive and coordinated fashion..

Panel Structure and Procedures

The WRP is responsible for addressing the provisions of Section 1203. During its first year the WRP has developed and refined an operational structure which meets the diverse needs of its members. ("Western Regional Panel Guide to Procedures",Appendix C).

The WRP carries out its responsibilities through a Panel Structure consisting of an Executive Committee and Inland, Coastal and Island Subcommittees. (Inland and Coastal Committees have been established.) The 8 member Executive Committee are elected by the full WRP membership and reflect the Panels membership. The Executive Committee drafts agendas for WRP meetings, and decides on procedural and operational questions as appropriate. Additionally, the Executive Committee is responsible for carrying out actions determined by the WRP. The Geographic Subcommittees develop the annual work plan for the Panel and ensure regional needs and priorities are incorporated.

Staffing

The Executive Committee with logistical assistance from the WRP Coordinator provide staff support for the Panel. The level of support is dependent upon the availability of funds and prior commitments of members involved on the Executive Committee. The Executive Committee members include; Chair Bill Harvey, Ph.D.(State Rep), Andrew N. Cohen, Ph.D.(At Large Rep) Mark Sytsma, Ph.D.(At Large Rep), Randy Brown, Ph.D. (State Rep.), Derrick Toba (Tribal Rep), Dwight Williamson(Provincial Rep), Edward Theriot, Ph.D.(Federal Rep.) and Coordinator, Linda Drees(USFWS).

The subcommittees provide an avenue for nonmembers to affect priorities within WRP Work Plan. The Inland Committee Co-Chairs are Krista Doebbler (Bureau of Reclamation), Nate Dechoretz (California) and Wendy Ralley (Manitoba), The Coastal Committee Co-Chairs are Jodi Cassell(CA Sea Grant) and Paul Heimowitz(OR Sea Grant).

Funding

Section 1301(b)(6) of P.L. 101-636 authorizes $200,000 for regional panels other than the Great Lakes. In FY 1996 a working group was established to develop the WRP. Funding for the working group activities were provided by individual federal and state agencies participating in the work group. In l997, the WRP Working group received $2,000 respectively from NOAA, USFWS, USACOE, and BOR (total $8000) to conduct the first western region symposium and meeting of the Western Regional Panel. In May l998 the Panel submitted a work plan and grant for funding from the USFWS. In September l998 and 1999 the Panel received a grant for partial funding to conduct the work plan. Contributing support from member agencies and organizations have allowed the Panel to meet its l997 and 1998 work plan objectives and are sought to meet 1999 work plan objectives.

RESPONSIBILITIES, ACTIVITIES AND ACCOMPLISHMENTS OF THE WRP

Responsibilities

Broad goals for the Western Regional Panel are defined by Section 1203 of the National Invasive Species Act of l996(Appendix H). Section 1203 (b) Western Regional Panel.-- "Not later than 30 days after the date of enactment of the National Invasive Species Act of 1996, the Task Force shall request a Western regional panel, comprised of western region representatives from Federal, State, and local agencies and from private environmental and commercial interests, to–

l. identify priorities for the western region with respect to aquatic nuisance species;
2. make recommendations to the Task Force regarding an education, monitoring (including inspection), prevention, and control program to prevent the spread of the zebra mussel west of the l00th Meridian pursuant to section 1202(I) of this Act;
3. coordinate, where possible, other aquatic nuisance species program activities in the western region that are not conducted pursuant to this Act;
4. develop an emergency response strategy for Federal, State, and local entities for stemming new invasions of aquatic nuisance species in the region;
5. provide advice to public and private individuals and entities concerning methods of preventing and controlling aquatic nuisance species infestations; and
6. submit annually a report to the Task Force describing activities within the western region related to aquatic nuisance species prevention, research, and control."

Activities Conducted and Accomplishments to Address Statutory Goals for WRP

Enumerated below are statutory goals addressed by WRP. Below each numbered goal are listed the activities conducted and accomplishments to address the goal.

1. **Identify priorities for the Western region with respect to aquatic nuisance species**

   ! WRP meetings provide a forum for exchange of information in order to develop a more cost effective and efficient approach to prevention, research, monitoring and control efforts in the western region. At these

meetings, federal, state, tribal, provincial, private industry, nongovernmental organizations and researchers have began the process of identifying priorities and needs for ANS prevention and control management.

In the first year and half, the WRP membership has held formal meetings in;

- July l997 - Portland, OR - lst Western Regional Forum on ANS and organizational meeting of the WRP
- March, l998 - Sacramento, CA - WRP Spring Meeting in conjunction with the 8th International Zebra Mussel and other ANS Conference
- September, l998 - Denver, CO WRP Fall Meeting
- August, 1999 - Olympia, WA - Luncheon Roundtable in conjunction with ANSTF meeting
- October, 1999- Austin, TX Fall Meeting

! Development of l999 WRP FY Work Plan outline priorities for the western region were identified by the Inland and Coastal Committees and adopted by the WRP at the third annual meeting in October, 1999. The overriding priorities for this plan are the continued refinement of mechanisms to facilitate information transfer, monitoring, and communication between members and interested parties. These priorities accomplished through development and implementation of Internet based communication systems for the western region and procedural guide for the WRP.

! Development and presentation of briefings on WRP activities and western region priorities before the 1999 Aquatic Nuisance Species Task Force Meetings to assist the ANSTF in developing and monitoring national objectives.

! Developed first draft of the Rapid Response Protocol at request of the ANSTF and presented the draft to the ANSTF at the December, l999 ANSTF meeting.

! WRP members have identified the critical need for the development and implementation of State ANS programs. In order to promote more active State involvement at all levels from policy to management, the WRP promoted placement of a WRP liaison position within the Western Governor's Association(WGA). WRP members worked with the USFWS to develop this liaison position which was placed in the WGA in July l999. The liaison has developed a working group comprised of members of the WRP and other interests groups to to identify terrestrial and aquatic invasive species priorities This work group met in Las Vegas in December, l999.

1. **Make recommendations to the Task Force regarding an education, monitoring (including inspection), prevention, and control program to prevent the spread of the zebra mussel west of the l00th Meridian pursuant to section 1202(I) of this Act;**

At the introductory forum of the WRP panel members identified pathways and vectors for introduction of aquatic exotics into the west. These included ballast water, commercial and public sector movement of animals and plants, and recreational and commercial boat traffic. Recreational boat traffic traveling from infested areas in the east was identified as a vector for infection of western waters. Support for implementation of the l00th Meridian Initiative to prevent or slow the spread of zebra mussels and other aquatic nuisance west of the l00th Meridian was included as Objective 3 of FY l999 Work Plan. Activities to meet the objectives include;

! WRP members will participate in an assessment of the l00th Meridia Initiative at a cooperator review to be held in Council Bluff , IA on March 9, 2000. Members will review; data analysis from boater education sites, current strategies success and recommend amendments to the strategy to improve effectiveness of the Iniative.

! WRP member States recommended strategic locations for placement of boater education stations on east-west interstate highways in l00th Meridian States and Province from Texas to Manitoba. These education stations were staffed throughout the summer and fall of l999 reaching hundreds of boaters traveling into the western U.S. Additionally, key western waters have been identified by members states ANS action teams and working groups as warranting specific boater education programs. Lake Powell National Recreation Area, Utah ANS Task Force, and the Columbia River are examples of such efforts.

! WRP members are working with the USACOE to incorporate l00th Meridian activities into the Lewis and Clark Commemoration in order to prevent introduction of invasives by participants in the Commemoration. Potential actions will be addressed at a Strategy Session on March 9, 2000 in Council Bluff, IA.

! "The l00th Meridian Initiative: A Strategic Approach to Prevent the Westward Spread of Zebra Mussels and Other Aquatic Nuisance Species" prepared by the U.S. Fish and Wildlife Service for the Western Regional Panel.(November l998). Found on the **Western Regional Panel Web** page **http://www.wrp-ans.org** is the strategic planning document.

3. Coordinate, where possible, other aquatic nuisance species program activities in the western region that are not conducted pursuant to this Act;

! Development and implementation of an WRP Internet communication

system - The California Water Resources Department maintains a WRP Internet e-mail reflector for use by all members and interested parties to the WRP. This address is wrp@water.ca.gov. The reflector is used for information interchange, announcement of new invasive sitings, and management strategies by public and private sector entities.

! Development and publication of "Nuisance Notes" semiannual (Appendix E, Nuisance Notes) is a semiannual publication of the WRP. "Notes" provides a printed compilation of members activities for managing and controlling invasive species. These notes are distributed to members, interested parties, at all presentations delivered by WRP members, and segments included in the ANS Digest. (Total distribution approximately 4,000).

! Identification and solicitation of a liaison within the WGA.

4. Provide advice to public and private individuals and entities concerning methods of preventing and controlling aquatic nuisance species infestations; and

! Development and implementation of a WRP On Line Information Network - http://www.wrp-ans.org The WRP recognized that the Internet provides an efficient and cost effective method of transmitting ANS information and advice throughout the region and the world. Internet use is on the increase and the Panel determined use of this mechanism would improve coordination efforts and provide a useful tool for communicating current information. The Bureau of Reclamation has provided funding support and technical assistance to develop this web page. The WRP has received inquiries on a variety of management topics through use of this Internet access.

! Provided guidance on the development and implementation of Aquatic Nuisance Species Management Plans under Section 1204 of NISA. Sec. 1204 provides for grants to states to implement ANS management plans developed by States, Tribes or regional entitities. Section 1204 planning process is viewed as a cornerstone to the Act because it facilitates funding to States to address local needs. WRP Actions include; Sponsorship of the Aquatic Nonindigenous Species in the West Workshop, December l5, l998 in Boise Idaho. The meeting provided an opportunity for western state management agencies to receive advice about funding available under NISA and to coordinate management efforts for optimal effectiveness.

! Panel members provided informational presentations to governmental and nongovernmental organizations on the subject of invasive prevention, management and control and the efforts of the WRP. Information Briefs on ANS issues These included;Western Governor's Association, Pacific

Marine States Legislative Committee, California Water Commission.

5. Submit annually a report to the Task Force describing activities within the western region related to aquatic nuisance species prevention, research, and control.

! Report prepared, reviewed and submitted after soliciting ANS activity updates from federal, state, tribal, industry, and research representatives throughout the western region.

! Western Regional Panel Objectives for FY 2000 have been developed and included in the l999 Draft Work Plan(Appendix D, Work Plan)

PROGRAM UPDATES OF THE WESTERN REGIONAL PANEL MEMBER AGENCIES AND ORGANIZATIONS

States/Territories

Alaska

The Alaska Department of Fish and Game used it's limited resources to keep abreast of National ANS issues and to respond to requests for ANS information from the public, scientists and the media. The state's contact person also served on the advisory committee for the Prince William Sound Tanker Ballast Water Project. One Green crab report in southeast Alaska was investigated and found to be misidentification of a local crab. It is anticipated that a State ANS plan will be worked on during the coming year.

Arizona

! Arizona Game and Fish Department (AGFD) conducted an ANS State Management Workshop and prepared lst draft of an Aquatic Nuisance Species State Management Plan.

! FWS, BOR, BLM, California Fish and Game, California Department of Agricuture, and AGFD have developed an interagency task force to address Giant Salvinia Control in the lower Colorado River.

! In this years state fishing regulations bulletin, AGFD included pages on "don't pick up hitch-hikers" another entitled "Don't dump your bait bucket" page, emphasizing the damage that can be done by illegal translocations of fish and aquatic organisms.

! A "have you seen this plant" note is being included in all of the mailouts for boat registration renewal this year - to alert boaters to the giant salvinia issue.

! AGFD are working with boater education folks to incorporate ANS information into a) a

Wildlife Views Television Program segment that is targeted at boaters, b) boating education program materials and course outlines, and c) distributing brochures out to the public.

California

! CALFED, a consortium of federal and State agencies with the goal of restoring Bay//Delta and Central Valley environmental resources, provided l.25 million dollars for development of a Nonnative Invasive Species Program which includes a Strategic Plan, Implementation Plan, and funding of implementation actions. A portion of these funds is being used to establish and administer an invasive species task force and an implementation plan.

! The California Water Commission provided testimony for congressional Appropriations Committee hearings, urging increased funding for Coast Guard administration of NISA ballast water management activities.

! California was the first state to pass regulations governing discharge of ballast water.

! California Department of Agriculture implemented a rapid response program to eradicate a newly discovered population of Giant salvinia near Blythe, CA.

! The California Department of Agriculture continues to intercept boats carrying zebra mussels at border inspection stations.

Colorado

! Colorado Division of Wildlife(CDOW) lead efforts to detect and eliminate infestations of purple loosestrife continue. Most work has been in and around the Denver area, but this year an infestation was found along the lower Arkansas River, in southeastern Colorado, and was, hopefully, eradicated.

! The CDOW and the Division of Parks & Outdoor Recreation are collaborating to send an informational flyer about zebra mussels to approx. 125,000 registered boaters in early 2000. The flyer describes the zebra mussel problem and provides guidelines on how to clean boats and prevent transporting mussels from infested areas.

! A great amount of time and money continues to be invested in the battle against the introduced aquatic parasite, Myxobolus cerebralis, which causes whirling disease in trout. This organism has had significant impacts on Colorado's cold water sport fishing, and millions of dollars are being spent to eliminate it from fish hatcheries and develop management strategies for its control.

Guam

Government of Guam -Department of Agriculture- Division of Aquatic and Wildlife Resources. The Division of Aquatic and Wildlife Resources (DAWR) has a policy in place banning the import of certain aquatic species, including nuisance species. Examples of species considered a threat include freshwater turtles (i.e. *Chelydra serpentina*), walking catfish (*Clarias* spp.), and

crayfish (i.e. *Procambarus* spp.). DAWR also retrieves/accepts nuisance species when requested by the public. Additionally, DAWR staff conduct educational presentations that often involve the impact of introduced species on native species. Staff also provide the media with information on nuisance species. During the period from January 1999 - January 2000, DAWR did not conduct any research on aquatic nuisance species. Contact: Trina Leberer.

Kansas

The 100th Meridian Initiative is a multi-agency partnership effort to prevent the westward spread of zebra mussels and other aquatic nuisance species to western waters. The Fish &Wildlife Service is sponsoring and coordinating education outreach and voluntary trailered boat surveys with other agencies and partners in the states on the 100th meridian. Surveys similar to this are being conducted on major highways in Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota and the Province of Manitoba. Trailers, boats and related equipment are being voluntarily inspected for any aquatic nuisance species which may accidentally be carried to new locations.

New Mexico

New Mexico Department of Game and Fish(NMDGF) provides leadership on aquatic nuisance species. Activities have focused primarily on education and outreach by development of a zebra mussel brochure (in preparation) for distribution with departmental correspondence regarding fishing licensure and bait fish regulation. With support from the state's Share with Wildlife Program, the NMDGF funded a preliminary statewide crayfish inventory of major perennial drainages. Additionally, the conservation status of unionid mussels native to New Mexico has been assessed annually from 1995 with completion of statewide inventory projected for 2001. A preliminary aquatic nuisance plan has been developed for intra-departmental review prior to circulation in draft form for peer-review and comment.

Nebraska

Nebraska Zebra Mussel Working Group, the Nebraska Game and Parks Commission and Nebraska Public Power sponsored a Great Plains Zebra Mussel Monitoring and Information Workshop with Sea Grant faculty, March, 2000. This workshop was attended by representatives of the power and water industry, resource managers and researchers. The l00th Meridian Strategy meeting was held in conjunction with the workshop to evaluate l00th Meridian activities and to consider new prevention efforts for 200l.

North Dakota

North Dakota Game and Fish Department participated in the l00th Meridian Initiative. Boater education sites were identified and manned at strategic points on east west highways.

Oregon

! The State Board of Higher Education has approved forwarding a proposal for creating statutory recognition for the Center for Lakes and Reservoirs. ANS management will be a basic focus of the Center. Statutory recognition can be used to gain Congressional support for Portland States priorities, and garner federal support for the Center.

! In cooperation with the Natural Resources agencies in Oregon and the Governors office, the Center for Lakes and Reservoirs at Portland State University will produce a state ANS management plan. Funding for the Center for Lakes and Reservoirs will be provided by Portland State University and the Oregon legislature. Ongoing efforts by the Oregon Department of Agriculture in the development of a state weed strategy and Columbia river ports in addressing ballast water introductions will be important components of the Oregon ANS Management Plan.

! Ports on the lower Columbia River are beginning to develop a ballast water management program for the lower Columbia River.

South Dakota

South Dakota Department of Game, Fish and Parks (SDGFP) conducted the following activities to foster ANS prevention and control.

! 100^{th} Meridian Initiative activities conducted in l999.

- I-90 Rest Area Survey: To assess the movement of boaters/watercraft to the west through South Dakota a survey/count station was located at the I-90 Rest Area near Chamberlain, South Dakota. The survey was conducted from April through September using an 8:00am to 8:00pm survey day. A survey clerk, working a randomly selected four-hour time period, was stationed at the I-90 Rest Area where she/he could easily count the boat/watercraft traffic moving down I-90 in a westward direction. Data was recorded hourly. Also, any individuals trailering/transporting boats or other watercraft that stopped at the rest area were interviewed. For the six-month survey period an average of 2.25 boats/hour and 0.19 other watercraft/hour moved west past the I-90 rest area. Individuals interviewed were offered a packet of educational material at the completion of the interview. All data forms have been copied and forwarded to the University of Texas for encoding.

- Missouri River Reservoirs Access Site Survey: To assess the origin, movement and destination of boats and other watercraft being used on the Missouri River reservoirs, boaters/watercraft users were interviewed at the completion of their trip on the water, as part of ongoing angler use and harvest surveys on Lakes Francis Case, Sharpe and Oahe (SD GFP data, 2000 in press). Data was recorded on a standard survey form. Individuals interviewed were offered a packet of educational material at the completion of the interview. All data forms have been copied and forwarded to the University of Texas for encoding.

! Other ANS Activities

- After the discovery of zebra mussels near Sioux City, IA in April, 1999, a letter and informational package was put together and sent to marina and bait shop owners in southeastern South Dakota.

- All boat ramps on the Missouri River were signed with an aquatic nuisance

species (zebra mussel, watermilfoil and loosestrife) informational sign. The signs were a cooperative effort between SD Game, Fish and Parks, USACOE, the SD BASS Federation and Sport Fish Restoration.

- After the discovery of Eurasian Watermilfoil in Lake Sharpe, and inventory of Lake Sharpe was conducted to determine how wide spread the infestation was, news releases were prepared and distributed to statewide media, and informational ID cards were distributed to appropriate SD GFP staff.

- An educational presentation on Aquatic Nuisance Species in South Dakota was made to SD Project WILD facilitators.

Texas

! The Texas Parks and Wildlife Department (TPWD) is implementing the first statewide aquatic vegetation management strategy. Adoption of the Strategy is planned for June of 2000. The strategy is based upon an integrated pest management approach.

! We also just published the first Guide to Identification of Harmful or Potentially Harmful Fishes, Shellfishes and Aquatic Plants Prohibited in Texas(TPWD). Can be obtained by contacting Bob Howells, TPWD, Heart of the Hills Research Station HCR-7, Box 62 Ingram, TX 78025 Telephone No.: 210/866-3356, 3447.

Utah

! Utah Division of Wildlife Resources is a lead agency for the Utah Invasive Species Work Group. The Work Group has identified ANS priorities for the State.

! The Utah Division of Wildlife Utah Invasive Species Work Group is in the process of developing a traveling display on invasive species for use at public events.

! The exotic Daphnid Daphnia lumholtzi identified in Willard reservoir.

! A website has been developed to highlight Utah ANS activities Utah ANS Website **www.nr.state.ut.us/dwr/ans.htm**

Washington

! Washington Department of Fish and Wildlife (WDFW) provided a grant to the University of Washington(UW) to work on creating a state wide monitoring program for zebra mussels. Volunteers from the WA Dept. of Ecology, Army Corp of Engineers, UW and others are collecting water samples across the state. The samples will be tested for zebra mussel veligers by the UW.

- Green Crab monitoring and control program underway, using volunteers and agency staff to trap green crab in an effort to minimize their impact on our marine ecology and the WA shellfish industry.

- WDFW have hired one FTE through the Washington Conservation Corps to do public education presentations on Chinese Mitten Crab and Zebra Mussels along the Columbia and Snake rivers. We are presently putting together her presentation, and working with the Corp of Engineers and others to develop an itinery. We need assistance with funding for travel for this employee.

- The Washington State Patrol will begin inspecting commercially hauled boats for zebra mussels at port of entry weigh stations in November.

- Worked with Senator Jacobsen on legislation to create an Aquatic Nuisance Species Coordinating Committee for Washington. Also worked with the Senator, the shipping industry, and others to develop ballast water legislation that may serve as model legislation for the West Coast.

- Working with British Columbia on cooperative ANS management programs.

Tribes

There are approximately 250 Indian land areas, representing 276 individually recognized Indian tribes, administered as Indian reservations (reservations, pueblos, rancherias, communities, etc.) in the Western Region of the Continental United States. The Western Region reservations incorporate over 51.6 million acres of land that are held in trust by the United States. The largest is the Navajo Reservation with over 17-million acres of land in Arizona, New Mexico, and Utah. Many of the smaller reservations are less than 1,000 acres with the smallest less than 100 acres. Reservation lands can include freshwater lakes and streams, emergent wetlands, and intertidal marine and estuarine areas. In addition, there are over 228 native groups represented in Alaska and a multitude of indigenous groups in Hawaii and the U.S. Pacific Trust Territories.

Tribes have been active on the Western Regional Panel and in several western States. However, all States need to deal with individual tribes on a government-to-government basis since all States in the Western Continental U.S. have at least one Reservation within their boundaries. These Reservation lands are not covered under State or local laws, but under United States or tribal authority. Any comprehensive state management plan must include the tribes.

Several western tribes are currently involved in exotic weed removal efforts through the Bureau of Indian Affairs. These eradication and control programs include exotic wetland and intertidal weeds on tribal Reservations. The Western Washington Treaty Tribes have a unique relationship with the State of Washington in that fishing and shellfish rights were reserved in the Treaties of 1854 and 1855. The impact of aquatic nuisance species on the treaty fish and shellfish rights are of particular concern to the Tribes. Tribes currently participate in several national, regional, and state committees dealing with non-indigenous aquatic species.

Several examples of tribal ANS programs include the control of 1,362 cubic feet of the invasive weed, Spartina anglica, by the Swinomish Tribal Community on Reservation Tidelands in 1999. In addition, the Tulalip Tribes of Washington is working cooperatively with the State of

Washington and other agencies to monitor for the spread of Green crab, *Carcinus maenus*, both on and off Reservation lands.

U.S. Federal Agencies

U.S. Coast Guard

The U.S.'s mandatory Great Lakes ballast water exchange program, initiated in 1993, is a mature and well-established program. The National Invasive Species Act of 1996's (NISA) expansion of ballast water management (BWM) to the remainder of U.S. waters is, however, in its infancy. The Interim Final Rule implementing the statute's Voluntary National Guidelines for BWM was published on May 17th, 1999 and took effect on July 1st of the same year.

While the voluntary nature of the program has come under criticism from a variety of interests, a voluntary regime is precisely what NISA called for. The intent was to allow the shipping industry the opportunity to demonstrate that it can be a good corporate citizen without the threat of civil and criminal penalties, as were incorporated in the program for the Great Lakes.

With some few exceptions, under these NISA-mandated voluntary guidelines, all vessels entering U.S. waters after having operated outside of the nation's Exclusive Economic Zone (or 200 mile limit) are requested to conduct a mid-ocean ballast water exchange prior to entering U.S. waters. These same vessels are required to submit a BWM report to the Coast Guard.

In addition, all vessels operating in U.S. waters are asked to voluntarily take a number of operational precautions in order to minimize the uptake and release of aquatic species. These are similar to guidelines previously promulgated by the International Maritime Organization (IMO) and include such practices as avoiding ballasting at night, in shallow or turbid waters, and in areas with phytoplankton blooms or known infestations of harmful organisms or pathogens. These are some of the measures available to those vessels on domestic voyages and those that do not transit waters of sufficient depth to allow for conducting a proper mid-ocean ballast water exchange.

USCG and Department of Defense ships, and other public vessels, are excluded from the Voluntary National Guidelines of NISA, however they are directed to implement their own programs to meet NISA's intent. Coast Guard vessels currently conduct ballast water exchanges at least 12 nautical miles from shore and are developing longer term solutions in coordination with the Department of Defense and EPA through the Uniform National Discharge Standards program.

NISA also requires the USCG to report to Congress by January 1st of 2002 on (among other things) an assessment of vessels' compliance with the voluntary guidelines, and an assessment of the effectiveness of the voluntary guidelines in reducing the introduction and spread of ANS. If, based on this review of compliance and effectiveness, the Secretary of the Department of Transportation (the Department to which the Coast Guard belongs) determines the level of compliance to be inadequate, the Secretary is directed by NISA to make the requirements of the voluntary program mandatory and to implement civil and criminal penalties for failure to comply. This provides an incentive for industry to both comply with the guidelines and work towards feasible technological solutions.

! A close second in importance to the regulatory program are our education and outreach efforts. Working at the national level with NOAA's Sea Grant program and other

members of the ANSTF, the USCG is developing educational material that will convey the magnitude and urgency of the invasive species issue to the commercial and recreational communities, as well as the rising generations of mariners and boaters. We are also exploring the possibility of translating some of our primary outreach materials into several of the most common maritime foreign languages.

! In order to assess both the level of compliance and effectiveness of the voluntary guidelines, the USCG is collecting and analyzing the BWM reports required to be submitted by vessels' operators. This is being done in conjunction with the National Ballast Water Information Clearinghouse (NBIC). The NBIC was established by NISA at the Smithsonian Environmental Research Center (SERC) in Edgewater, Maryland and acts as our agent for the receipt of ships' BWM reports, data entry, data base management, and other functions related to the implementation of NISA.

! Along with education, the focus of our field units' efforts is a random survey program by which the USCG will "ground truth" the veracity of the vessels' BWM reporting. These random onboard examinations will include interviewing ships' personnel about their BWM practices, inspection of shipboard records and the drawing of small amounts of ballast water for simple salinity testing.

! As well as providing field program support, the USCG Headquarters BWM staff are expanding their efforts to find environmentally sound alternatives to ballast water exchange (as this method of BWM is universally viewed as only an interim solution). Technology has yet to catch up with the problem. As the chair of the ANSTF committee on Ballast Water and Shipping, the USCG is working with a variety of interests to explore promising technologies. Among these are filtration, centrifugal separation, ultraviolet radiation, and heat treatment.

! The Coast Guard's BWM program is currently funded at approximately $3.4 million dollars. This includes 39 field billets (22 of which were created in the Spring of 1999) and 3 Headquarters billets (two of which were new in 1999.)
In carrying out the nation's BWM program, key USCG activities will include:

- Remaining an active member of the ANSTF and tracking activities of the Invasive Species Council as they relate to BWM;
- Chairing the ANSTF's Ballast Water and Shipping Committee, which is developing a protocol for testing and approving alternative BWM technologies;
- Pursuing BWM research using cooperative research and development agreements to the maximum extent possible;
- Maintaining the NBIC at the SERC, with whom we will synthesize and analyze the data collected from both our field activities and industry's BWM reporting;
- Playing a major role n the development of international BWM regulations through IMO and chairing the interagency working group responsible for preparing the U.S. negotiating position;
- Participating in regional forums (e.g., ANSTF WRP Coastal Committee, the Pacific Ballast Water Group, Canada's West Coast Ballast Water Group, and California Sea Grant's West Coast Ballast Outreach Project); and

- Cooperating to the extent feasible with States that have enacted their own BWM legislation (such as California with its Assembly Bill 703).

! Two pertinent web sites are the USCG's www.uscg.mil/hq/g-m/mso4/First.htm (which contains the Voluntary National Guidelines for BWM) and the NBIC at www.serc.si.edu/invasions/ballast.htm (where National Ballast Survey (NABS) reports are posted on a quarterly basis). While initial results appear promising, at the time of this writing it is still too early in the life of the program to accurately forecast the eventual trend in the level of compliance with the National Voluntary Guidelines for BWM.

Contact: CDR John W. Koster USCG Pacific Area/Eleventh District Ballast Water Management Coordinator (510) 437 2956 email JKoster@d11.uscg.mil

National Oceanic and Atmospheric Administration

California Sea Grant Aquatic Nuisance Species Projects

! The West Coast Ballast Outreach Project (WCBOP) is a two-year grant funded project that runs from February 1999 to February 2001. The California Sea Grant Extension Program is running this program in cooperation with the Oregon, Washington, Alaska, and Hawaii Sea Grant Programs. The primary goals of the project are 1) to improve awareness and communication about ANS and ballast management issues among the maritime industry, regulators, scientists, and general public, and 2) to facilitate enhanced compliance with NISA 96 and to development of new approaches or technologies for ballast management. The project deliverables include a series of ballast water forums, a biannual newsletter, a ballast water exchange poster and brochure, and a web site with information on the project and other related ballast water and ANS issues.

! During the 1999 calendar year WCBOP sponsored three Ballast Water Forums: 1) Vallejo, California, 2) Olympia, Washington, and 3) Vancouver, Canada. Dates for some of the forums that will take place over the next 6 months have already been set, including: Alaska in late March, Hawaii in early June in conjunction with the PACON conference, and Portland in early July in conjunction with the Coastal Society Conference. There will also be several forums hosted in California, but the dates have not been set yet.

! The first volume of the biannual newsletter, "Ballast Exchange," was distributed in Fall 1999. The ballast water exchange poster and brochure are currently under development and should be ready for distribution in the spring. The web page is currently under construction and should be fully developed by early spring. WCBOP is also working with the Pacific Ballast Water Group to help coordinate ballast water management effort along the West Coast of the United States. If you have any input or questions about WCBOP please visit our web site at http://ballast-outreach-ucsgep.ucdavis.edu, or contact

Jodi Cassell, California Sea Grant Extension Program Marine Advisor at (650) 871-7559, jlcassell@ucdavis.edu, or Karen Hart, West Coast Ballast Outreach Project Coordinator at (510) 622-2398, kdhart@ucdavis.edu.

Summary of Oregon and Washington Sea Grant Aquatic Nuisance Species Projects

! In 1999, the Pacific Northwest Marine Species Team (a partnership between Oregon and Washington Sea Grant programs) continued to provide a variety of regional outreach products and programs, including:

! Producing a fact sheet on the Chinese mitten crab in cooperation with the U.S. Fish and Wildlife Service. This fact sheet was made available during the March 1999 mitten crab workshop in Sacramento; Providing informational talks and displays for a variety of groups and meetings, including the Marine Bioinvasions Conference, National Marine Educators Association Conference, Marketing and Shipping Live Aquatic Products Conference, Northwest Aquatic and Marine Educators Conference, Pacific Ballast Water Group, Center for Marine Conservation Estuary Volunteer Monitoring training workshop, Hatfield Marine Science Center "Sustainable Seas" evening lecture series, and Oregon State University Fisheries and Wildlife department seminar.

! Creating an interactive ANS classroom game, "Alien Invaders", aimed at 4th-8th grade students and used to educate over 200 youth during the Children's Clean Water Festival in Portland, OR;

! Co-sponsoring a workshop on Measuring Biological Integrity of the Lower Columbia River;

! Initiating production of a video series on early detection of ANS invasions. A first segment on Chinese mitten crab was videotaped in 1999 and will be distributed with several other segments in 2000;

! Developing a brochure to help biological supply customers understand the risks of invasive species and provide information on proper storage and disposal techniques (to be printed by February 2000);

! Drafting a field guide on "least wanted" ANS in the Pacific Northwest. This tri-fold brochure will be completed in 2000 and will include specific information and illustrations to aid in the identification of a number of species that are known to be established or are likely to arrive in Pacific Northwest waters. This field guide will be included with the early detection video.

! Pacific Northwest Mist was awarded $124,000 from the National Sea Grant College program to carry out additional projects in 2000-2001, including:
  - Developing one or more ANS displays at Pacific Northwest aquaria and science centers;

- Hosting a regional conference on ANS for municipal, agricultural, and industrial water users in the Pacific Northwest; and Identifying regional ANS research priorities

For more information, contact Paul Heimowitz with Oregon Sea Grant at (503) 722-6718 or Nancy Lerner with Washington Sea Grant at (206) 616-8403.

U.S. Army Corps of Engineers:

! Columbia River Basin: The Corps continued monitoring for zebra mussels at Columbia River Basin projects in 1999. Monitoring at the four lower Columbia River mainstem dams was expanded to include veliger sampling during the summer. Results from all monitoring efforts were negative.

! Some 500 public information placards about zebra mussels, produced in cooperation with the U.S. Fish and Wildlife Service, were distributed throughout the region and most have been placed at public boat ramps, campgrounds, and other high visibility areas. This has been a cooperative effort between the Corps and other Federal, State, and local entities. A data base is being developed to monitor costs, maintenance requirements, public response, and other information.

! Missouri River Basin: After the April 1999 sighting of the single adult zebra mussel on the traveling screen of the Neal North Unit #4 intake structure for Midwest American Power there was an increased emphasis on monitoring within the basin. The Corps in concert with power station operators, water supply intake owners, Coast Guard and many other users increased their monitoring vigilance. Not a single new sighting was discovered along the navigation channel or anywhere along the Missouri River basin during 1999. The Missouri River navigation channel seems to continue to be an effective barrier for whatever reason. However the Missouri River basin contains thousands of large and small impoundments. These impoundments will be our Achilles heel. On the chance that one of our mainstem or tributary dams could become a zebra mussel feeder to the river we also notified staff at the dams sights to be on the lookout for recreational boats with zebra mussels.

! The Tulsa District engaged in several ANS activities in l999. Assisted the Oklahoma Grand Lake Association with a two day public awareness effort on zebra mussels. Conducted two 1-hour seminars each day and a live 30-minute radio show. Interviews provided on zebra mussels to several newspapers and TV station Spring density count for ZM will be conducted on 13 March when R.S. Kerr lock on the Arkansas is dewatered for maintenance.

! Lewis and Clark Bicentennial Commemoration Activities: We are also working with the Lewis and Clark Bicentennial Committee to assure that information relative to zebra mussels and other ANS can be provided to participants in this national program. The main concern is that there will be thousands of people retracing the route taken by the Lewis and Clark expedition and there is a potential for incidental introductions of ANS. The concern is not just for species that might be brought into the west but also those that

might be taken back when the visitors return home. With the Lewis and Clark Bicentennial near with the potential of bringing many new people to the Missouri River we are developing strategies of information and education to help reduce or stop zebra mussel infestations in waters along the trail.

U.S. Department of the Interior

The Bureau of Reclamation:

! Throughout the 17 western states, Reclamation continued to battle both terrestrial and aquatic invasive species on several fronts. For example: yellow star thistle and Chinese mitten crabs in California; purple loosestrife in Washington; leafy spurge in the Dakotas, Giant Salvinia in Texas and the Lower Colorado River Basin; and water hyacinth and hydrilla in many locations.

! Also ongoing is Reclamation's research program for biocontrol of several invasive species including purple loosestrife, yellow star thistle, saltcedar, and leafy spurge. Restoration and revegetation have become increasingly important areas of concern.

! Efforts also focused on drafting a Reclamation-wide Integrated Pest Management manual, early detection of, and monitoring for invasive species on Reclamation lands and in Reclamation facilities, providing technical assistance on invasive species issues to water and power users, and implementing a public awareness campaign to help prevent the spread of invasive aquatic weeds.

Fish and Wildlife Service

The Fish and Wildlife Service has provided personnel or funding support for the following ANS activities. *Indicates leadership role.

- The Exotic Green Crab Workshop held in Vancouver, WA in 2/98.
- The Development and Production of Zebra Mussel Information and Prevention Signs for Columbia River Basin.
- Asian Carp Information, Monitoring, and Management Workshop - April 19-20, 2000*
- Drafting National Management Plan for Control of Mitten Crab*
- Investigations for the Impact of Nonindigenous Marine Species Introduced to Pearl Harbor on the Hull of the USS Missouri*
- The Puget Sound Expedition Ecological Survey
- Green Crab Monitoring in Puget Sound*The Washington Aquatic Nuisance Species Management Plan
- Strategies for San Francisco Bay Invasives
- Sausal Creek Diamond Park Restoration
- Spartina alterniflora removal efforts in South San Francisco Bay*
- Humboldt Bay Green Crab Survey
- Boat Inspection Video to promote education of recreational boaters to prevent the spread of ANS.
- Public Service Announcement Zebra Mussels and Eurasian Water Milfoil

- California Zebra Mussel Brochure*
- Eradication of New Zealand Spinach on Gulf of Farrellones and restoration*
- The l00th Meridian Initiative to Prevent the Western Spread of Zebra Mussels*The goals of this Initiative are to 1) prevent the spread of zebra mussels and other ANS in the 100th meridian jurisdictions and west and 2) monitor and control zebra mussels and other ANS if detected in these areas. These goals will be attained through the implementation of the following six components: 1) information and education, 2) voluntary boat inspections and boater surveys, 3) involvement of those who haul boats for commercial purposes, 4) monitoring, 5) rapid response, and 6) evaluation. This Initiative represents the first large-scale concerted effort, working with Federal, State, Provincial and Tribal entities, potentially affected industries, and other interested parties to begin addressing the pathway to prevent the spread of zebra mussels. Boater education stations were manned by state and academic cooperators at strategic sites on a long east-west interstate corridors during the summer of 1999 and are planned for summer of 2000.

- Great Plains Zebra Mussel Information, Monitoring and Management Workshop and l00th Meridian Strategy Session - March 8-l0, 2000.
- Western Regional Panel on Aquatic Nuisance Species Coordination*
- Western Regional Panel on Aquatic Nuisance Species Annual Meeting in September, l999, Austin, Texas*
- Chinese Mitten Crab Workshop March, l999*
- Coordination of the CALFED NIS Program*
- Development of a mobile ANS Display for use with a wide variety of audiences*
- Continued involvement with Pacific Ballast Water Group
- Spartina alterniflora removal efforts in South San Francisco (CA) and Willapa Bay (WA)*
- Facilitate research on bullfrog interaction with native amphibs and herps*
- Serve on State of Oregon Fish and Wildlife Biointegrity Committee (reviews applications for import/use of non-native species)
- Pacific States Marine Fishery Commission and Bonneville Power Authority efforts to increase western states and power distributors involvement in activities to complement 100th Meridian Initiative, especially along path of Lewis and Clark Expedition.

Provincial Members

British Columbia

! At present, Fisheries and Oceans is developing models to predict dispersal of non-indigenous Species from ballast water disposed of in Juan de Fuca Strait. Existing oceanographic models that have been used to predict larval drift are being adapted to incorporate temperature and salinity data from ballast water sampled in an earlier study. These models will predict dispersion from potential backup deballasting sites. (Glen Jamieson, Mike Foreman, Colin Levings).

! Experiments are being carried out to determine the effect of a new technology, the Velox Ballast Water Treatment System (VBWTS), on the mortality of invertebrate larvae. The VBWTS subjects organisms in ballast water to a hydrocyclone followed by exposure to

ultraviolet (UV). Experiments will be repeated with potentially harmful phytoplankton. (Terri Sutherland)

! A literature review of the ecological characteristics of organisms arriving in BC is being conducted to profile the ecophysiology of selected organisms from various sources of ballast. This information will help predict which organisms are most likely to colonize BC waters, identify hot spots and safe deballasting sites.

! On December 10,1999 Fisheries and Oceans is cosponsoring a Ballast Outreach Forum. This is part of the California Sea Grant Ballast Outreach Project.

! On October 4, 1999, a meeting of representatives from BC and Washington to discuss the existing problems with the nuisance aquatic plant, Spartina spp. This plant was introduced in the late 1800s to the West Coast of North America initially as packing material for Japanese oysters. The oysters were being imported to replace diminishing stocks of native oysters. There are five species of Spartina that occur intertidally on this coast. Three are considered problems as they have spread at alarming rates and displaced local plants. The immediate concerns are the loss of mudflat area and diversity. Spartina species have been shown to supplant eelgrass. Sedimentation increases around the plants and fish movement patterns can be altered. At present, the impacts on salmonid and other fisheries are unknown. Shellfish grounds are threatened and may be smothered. The overall loss of mudflats, eelgrass and macroalgae as a result of aggressive colonization of Spartina will negatively impact those fish and bird species that depend on these areas for feeding, spawning, or rearing habitat. BC will assess the spread of Spartina in the province and reach an understanding of the potential threat of this exotic plant species to existing ecosystems. Fisheries and Oceans should take a lead through either the exotic species or nearshore habitat loss forums available to them. Canadian Wildlife Service is also interested from a migratory bird perspective.

! The province of BC is lifting its four-year self-imposed moratorium and will grant only a minimum number of new tenures in the nest two years. It will review the success of the new salmon-farming regime. The key elements of the regime: the number of stand-alone conventional tenures is capped at 121. Investment in new technologies will be encouraged. Waste standard will be based on water quality and effluent flows rather than on tonnage of feed used. All facilities will be required to implement approved escape prevention and recovery programs. Poorly sited farms will be relocated. There has to be a balance of roughness or calmness of the waters to balance escapism and pollution issues. The tenuring process is to be simplified and streamlined. Only 85 of 121 existing tenures are currently active. Most, if not all, of the 36 dormant farms will be allowed to return to operation.

Manitoba

! The Province of Manitoba is actively involved in preventing accidental introduction and spread of Aquatic Nuisance Species into Manitoba watersheds. Zebra mussels have not been found in Manitoba waters, but efforts towards public awareness and prevention are

managed by the provincial department - Manitoba Conservation. Efforts included new boater's advisory signage for launch sites and tackle shops, on-line zebra mussel information currently under construction, and representation at trade shows. Purple loosestrife has established across southern Manitoba and is actively managed by the Manitoba Purple Loosestrife Project (MPLP). MPLP activities in 1999 were concentrated on a classical biological control program using four European insects, a purple loosestrife/perennial swap program, a web page (www.ducks.ca/purple/), and conducting an ANS awareness survey.

! In June 1999, zebra mussels were found on a pleasure boat that was purchased in Southern Ontario and trailered to a yacht club north of Winnipeg. All zebra mussels were dead and the owner was ordered under The Environment Act to clean the vessel before launch.

! No zebra mussels were found in intensively used recreational waters as indicated by results of the1999 monitoring efforts.

! During the summer and fall of 1999, the MPLP conducted a survey of general knowledge of ANS in Manitoba using slightly modified 100th Meridian survey forms. Results will be presented at the International ANS and Zebra Mussel meetings in Toronto. These data will be used to augment the 1994 zebra mussel survey results conducted at the international border crossings in Manitoba and Northwest Ontario.

! Approximately 60,000 biocontrol agents were mass-reared and released in 1999 against purple loosestrife. Performance monitoring at previous biocontrol release sites indicate that close to 100% control of purple loosestrife is being achieved in anywhere from 1 to 4 years post beetle release.

Other Members

Western States Water Council

The primary function of WSWC is information-sharing among state water management agencies, accomplished at the Council's quarterly business meetings. With regard to ANS, the major effort has been to educate water mangers in the interior western states about impacts of these species to water users. This year, members heard presentations on California's new ballast water legislation, the need for funding for Coast Guard administration of NISA ballast water management activities, the formation of WGA's new Work Group, and modifications made to California's Central Valley Project and State Water Project pumping plants to handle the mitten crab migration.

Puget Sound Water Quality Action Team

! Identified aquatic nuisance species (ANS) as a priority for the 1999-2000 Puget Sound Water Quality Work Plan. The plan identifies a need for $248,000 for Puget Sound ANS activities including green crab monitoring, Spartina eradication and technical assistance and education

- Education: Contracted with Washington Sea Grant to develop and distribute educational materials for control of ANS. Educational materials were distributed widely in the Puget Sound basin, in British Columbia and west coast states.
  - Products developed include green crab identification cards, pet store cards, and a general education handbook - Bio-invasions:Breaching Natural Barriers.
  - Products in development include a protocol for handling and disposal of ANS at research and educational facilities and identification cards for five "least wanted" species.

- Research: Prepared a report that characterizes current Puget Sound shipping and ballast practices, discusses regional oceanography and outlines important considerations for selecting ballast water exchange zones for ships entering the Strait of Juan de Fuca.

- Policy: Preparing to add a section on aquatic nuisance species to the Puget Sound Water Quality Management Plan. Agency: Puget Sound Water Quality Action Team, Office of the Governor,
  State of Washington Contact: Kevin Anderson, 360-407-7324 or kanderson@psat.wa.gov
  Management:

Pacific States Marine Fisheries Commission

The Pacific States Marine Fisheries Commission (PSMFC), with funding from the Bonneville Power Administration (BPA), is undertaking actions to address the aquatic nuisance species (primarily zebra mussels) threat to the Columbia River Basin. Goals of the PSMFC/BPA effort include developing an aquatic nuisance species plan and initiating preventative actions to slow or prevent the spread of zebra mussels into the Columbia River Basin. The PSMFC also administers a program carried out by Portland State University to coordinate management of aquatic nuisance species on the West coast by working with states in development of complementary management plans. Contacts: Pacific States Marine Fisheries Commission: Stephen Phillips (503) 650-5400 Portland State University: Dr. Mark Systma (503) 725-3833

Center for Marine Conservation

- Local policy efforts
  - CMC used state environmental impact assessment law (the California Environmental Quality Act) and the federal Endangered Species Act to challenge expansion projects at the Port of Oakland, the San Francisco Bay Area's largest port and a major U.S. container port. The projects' environmental analyses failed under state (CEQA) and federal (ESA) law to consider impacts associated with increased discharges of invasives that would result from the increased traffic brought about by the expansion. In response to this challenge, the Port of Oakland has mitigated its expansion projects in part by instituting a mandatory ballast water exchange regulation, modeled after the Port of Vancouver project, and proposing new ballast water monitoring work.

  - CMC supported work by the San Francisco Regional Water Quality Control Board, the state agency charged with protecting the health of San Francisco Bay's

waters, to regulate ballast water under Section 303(d) of the Clean Water Act. The Bay waters have been declared "impaired" by invasives under Section 303(d); the Regional Water Board accordingly must prepare a "load" of invasives that the Bay can tolerate. CMC supported a load of "zero invasives," which is the load that was recently proposed by the Regional Water Board. CMC will continue to work to ensure that this load is adopted and that an adequate implementation plan is developed and enforced.

! Statewide/regional policy efforts

- CMC developed and co-sponsored a bill by State Assembly Member Ted Lempert (D-Palo Alto) to require ballast water exchange in the open ocean; this bill was signed into law in October.

- CMC has provided, and will continue to provide, an environmental advocacy voice on invasives species task forces such as: the task force for the CAL-FED program, a multi-billion dollar effort to restore the health of the Bay-Delta ecosystem; the task force developed pursuant to Washington state legislation calling for recommendations pertaining to control of the green crab and zebra mussel; and the Western Regional Panel of the Aquatic Nuisance Species Task Force, developed pursuant to the National Invasive Species Act of 1996.

! National policy efforts

- CMC helped develop and was a co-signatory to the January 1999 petition to the U.S. Environmental Protection Agency to regulate ballast water discharges under the federal Clean Water Act's permit program. The petition argues that EPA exceeded its authority when it adopted a regulation exempting ballast water from the permit program, as the Clean Water Act grants no such exemption. As a result, EPA has committed to a draft report assessing regulatory options; a final report will be issued in spring of 2000.

! Educational efforts

- CMC planned and co-sponsored, along with the Pacific Merchant Shipping Association, the California Association of Port Authorities, the State Lands Commission, and Sea Grant, a conference on managing the discharge of invasives in ballast water.

- The conference was held on June 16, 1999 at the California Maritime Academy and featured speakers on scientific, legal and technical issues and provide a panel discussion that will address audience questions; approximately 180 people attended. CMC spoke at the conference on regulatory issues, particularly with respect to regulation of ballast water under federal and state water quality laws.

- CMC also is working with Sea Grant on a new project to educate the shipping industry about the problems associated with the discharge of invasive species. CMC recently drafted an article summarizingexisting and proposed regulatory

regimes for the first issue of the project's educational journal, and will continue to assist with this education effort.

CALFED

Formed Nonnative Invasive Species Program to coordinate related activities in the San Francisco Bay-Delta and watersheds. Developed Draft Strategic and Implementation plans. Selected directed projects for research, control, eradication, and outreach/education. Completed technical review of projects submitted to an open solicitation. Further research and eradication and control work will be supported through this process. Participation in Western Regional Panel, Aquatic Nuisance Species Task Force, Western Governor's Working Group, California Sea Grant Ballast Water Outreach Advisory Team, Pacific Ballasat Water Working Group, Environmental Protection Agencies Invasive Species Forum and many other invasive species activities and organizations. Subjects of approved projects include: mitten crabs, ballast water, asian clam, arundo, purple loosestrife, zebra mussels, spartina education on vectors, and others.

Not reporting at time of printing; Environmental Protection Agency, U.S. Department of Agriculture, NV,WY.